

WHAT IS CLAIMED IS:

1. An adjustable occlusion device deployment system, for implanting an occlusion device within a tubular structure in the body comprising:

an occlusion device, movable between a reduced cross section and an enlarged cross section; and

a deployment catheter, releasably attached to the occlusion device;

a releasable lock for retaining the occlusion device on the catheter; and

a core, for changing the cross-section of the occlusion device.

2. An adjustable occlusion device deployment system as in Claim 1, wherein the occlusion device comprises an expandable frame.

3. An adjustable occlusion device deployment system as in Claim 2, wherein the frame comprises at least two spokes.

4. An adjustable occlusion device deployment system as in Claim 3, wherein the frame comprises at least six spokes.

5. An adjustable occlusion device deployment system as in Claim 3, wherein each spoke is movable from an axial orientation when the occlusion device is in the reduced cross section to an inclined orientation when the occlusion device is in the enlarged cross section.

6. An adjustable occlusion device deployment system as in Claim 5, wherein each spoke comprises a proximal section, a distal section, and a bend in between the proximal and distal sections when the occlusion device is in the enlarged cross section.

7. An adjustable occlusion device deployment system as in Claim 5, wherein the spokes comprise wire.

8. An adjustable occlusion device deployment system as in Claim 5, wherein the spokes are cut from a tube.

9. An adjustable occlusion device deployment system as in Claim 1, further comprising at least one tissue attachment element on the occlusion device.

10. An adjustable occlusion device deployment system as in Claim 9, wherein the tissue attachment structure comprises a tissue piercing element.

11. An occlusion device for occluding a tubular body structure, comprising:

a plurality of spokes which are movable between an axial orientation and an inclined orientation;

a threaded aperture carried by the device; and

a stop surface carried by the device;

5 wherein a threaded core is rotatable within the aperture to cause the core to contact the stop surface and axially elongate the device.

12. An occlusion device as in Claim 11, further comprising a membrane or mesh carried by the spokes.

10 13. An occlusion device as in Claim 11, comprising at least three radially outwardly moveable spokes.

14. An implantable device, comprising:

a radially enlargeable frame having a proximal end and a distal end;

a proximally facing stop surface within the frame; and

a threaded aperture in the frame, proximally of the stop surface;

15 wherein distal axial advancement of a threaded core through the threaded aperture distally advances the stop surface thereby axially elongating and radially reducing the implantable device.

15. An implantable device as in Claim 14, wherein the device is an occlusion device.

20 16. An implantable device as in Claim 14, wherein the device is a filter.

17. An occlusion device implantation system, comprising:

a deployment catheter, having an elongate flexible body with a proximal end and a distal end;

an antirotation lock on the body;

25 a rotatable core extending axially through the body; and

a radially expandable implant releasably connected to the distal end of the body.

18. A method of implanting a device in the left atrial appendage, comprising the steps of:

providing a deployment catheter, having an elongate flexible body with a proximal end and a distal end, a control on the proximal end and a device removably carried by the distal end;

positioning at least a portion of the device in the left atrial appendage;

5 and

manipulating the control to enlarge the device under positive force.

19. A method as in Claim 18, wherein the manipulating step comprises rotating the control.

10 20. A method as in Claim 18, wherein the device comprises an expandable frame.

21. A method as in Claim 20, wherein the frame comprises at least two spokes.

22. A method as in Claim 20, wherein the frame comprises at least six spokes.

15 23. A method as in Claim 22, wherein each spoke is movable from an axial orientation when the device is in a reduced cross section to an inclined orientation when the device is in an enlarged cross section.

20 24. A method as in Claim 21, wherein each spoke comprises a proximal section, a distal section, and a bend in between the proximal and distal sections when the device is in the enlarged cross section.

25. A method as in Claim 21, wherein the spokes comprise wire.

26. A method as in Claim 21, wherein the spokes are cut from a tube.

25 27. A method as in Claim 18, wherein the device further comprises a plurality of tissue anchors, and the method comprises the step of engaging tissue with at least some of the tissue anchors.

28. A method of removing a device having tissue anchors thereon from a site in the body, comprising the steps of:

positioning the retrieval catheter with respect to the device such that the anchors are within a flared distal end on the retrieval catheter;

30 reducing the diameter of the flared distal end, with the anchors therein;
and

removing the retrieval catheter from the site.

29. A method as in Claim 28, wherein the reducing step comprises positioning the flared distal end within an outer tubular sleeve.

5 30. A retrieval catheter for retrieving a device from an implantation site within the body, comprising:

an elongate, flexible body, having a proximal end and a distal end;
a grasping structure on the distal end, for grasping the device;
a flared tubular sleeve, for surrounding at least a portion of the device;

and

10 an outer tubular sleeve, for surrounding the flared tubular sleeve.

31. A retrieval catheter as in Claim 30, wherein the flared tubular sleeve comprises a plurality of petals which are moveable between an axial orientation and an inclined orientation.

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